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THE SOUTH AMERICAN MICE REFERRED TO
MICRORYZOMYS AND THALLOMYSUS

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In reporting on a collection of Peruvian mammals in 1914 (Field Mus. Nat. Hist., Zool. Ser., 10, p. 158, 1914), I pointed out some of the characters which distinguish the small forest mouse then known as *Oryzomys dryas*. At that time, the resemblance of *dryas* to *Rhipidomys* was noted and a close ally of *dryas* was referred to *minutus*, the determination being based largely on comparison by Oldfield Thomas of the original types and specimens sent to London for that purpose. Some years later, Thomas (1917) gave the generic name *Microryzomys* to the group which I had previously defined and, at this time, he designated *Oryzomys minutus* as the type. Still later, the same author (1926) renounced *Microryzomys* and proposed *Thallomyscus* with *dryas* as type, in the belief that *minutus* and *dryas* were not congeneric and that his first identification of *minutus* had been erroneous. He gave no grounds for this change of opinion further than to state that the toothrow in the type of *minutus* "measures 3.1 mm. in length, a dimension never equalled in *Thallomyscus*."

That one so acute as Thomas should thus reverse himself is sufficient evidence that the case is one of considerable difficulty not lightly to be entered into again. Nevertheless, after study of all the material which was accessible to Thomas and much more which was not, I am convinced that the types of *minutus* and *dryas* are one and the same species, collected at the same place, at nearly the same time, by the same collector. This, therefore, means another right-about-face by which *Microryzomys* regains its position as the generic or subgeneric term for the species in question and *Thallomyscus* becomes the synonym.

The entire matter depends upon the identification of the type of *minutus*. This type is quite young and the skin is one of those unreliable preparations "from spirit." However, so also is that of *dryas* and by external characters the two are quite indistinguishable.

The skull of the type of *minutus* is in fragments of which only those including the upper molars and one infraorbital plate have any comparative value. The molars are quite unworn, the last one only partly erupted and still below the level of the others. The tooththrow in this condition, as stated by Thomas, is 3.1 mm. in length, but contrary to his statement, this is not an excessive length for the tooththrow in this species. It should be said that Thomas must have made his comparisons with *aurillus*, for of *dryas* itself (exclusive of the type of *minutus*) the British Museum still possesses only the type specimen in which the molars are worn nearly to the roots and unquestionably shortened. In four specimens of *aurillus* at hand from northern Peru, the measurements of the tooththrow are 3, 3.2, 3.2, 3. In the type of *aurillus* the measurement is 3 and in the type of *dryas* also 3. A recent specimen from Ecuador measures 3.1. Therefore it is evident that the length of the tooththrow gives no evidence to distinguish the type of *minutus* from that of *dryas*. The same is true of the infraorbital plate which is of the non-projecting form and in the type of *minutus* its antero-posterior dimension is 1.55. In the type of *dryas* it is 1.6. In north Peruvian specimens the measurements are 1.8, 1.6, 1.6, 1.7. In two random examples of "*stolzmanni*" the tooththrows are 3.5, 3.4 and the zygomatic plates 2, 2.1. Therefore, so far as measurements are concerned all the evidence favors the identity of *minutus* and *dryas*. The same is true of external characters and nothing remains upon which to base a distinction.

A somewhat cursory review of the entire group to which *minutus* belongs and a further examination of the Peruvian and Ecuadorean allies of *Oryzomys longicaudatus* (i.e. *destructor*, *stolzmanni*, et al.) indicates that the two groups are quite distinct, one departing from typical *Oryzomys* in the direction of *Thomasomys* and the other having the principal characters of the very slightly differentiated but widespread group known as *Oligoryzomys*. As stated in 1914, what may now be called *Microryzomys* is far better distinguished from *Oryzomys* than is *Oligoryzomys*, although the two have been somewhat confused because both include species of very small size. As contrasted with any of the smaller *Oligoryzomys*, the skull in *Microryzomys* has a recognizable general form produced by the slender rostrum, the narrow non-projecting infraorbital plate, and the short, broad, and more rounded braincase. The cheekteeth are relatively smaller and the first upper molar has its anterior elements, the parastyle and protoconule, definitely and nearly evenly divided. Also, the

protoconule is not greatly out of line with the protocone and hypocone. These characters of the teeth, it may be said, are clearly shown in the type of *minutus*. All the characters above mentioned are repeated in *Thomasomys* rather than *Oryzomys* and, if it were not for the rather long palate and marked lateral pits, there could be no objection to regarding *minutus* as a diminutive *Thomasomys*. Its thick, soft pelage and its general external appearance also point to affinity with *Thomasomys*.

Whether or not more than one bona fide species is referable to *Microryzomys* is doubtful. Various names have been given but the distinctions drawn, so far as verified, prove to be either non-existent or so slight as to indicate no more than subspecific importance. In referring to *Microryzomys* as a "group," therefore, we are probably referring to a group of subspecies rather than a group of species. As a species, *minutus* is easily recognizable, but it has a mixture of characters heretofore regarded as diagnostic of considerable assemblages of species, thus making its generic status difficult. Such species are all too numerous among South American rodents and the combination of characters they offer runs from one extreme to another so it is clear that no ultimate generic and subgeneric classification will be possible until all these species are thoroughly understood. There are species which seem to connect *Oryzomys* with *Thomasomys*, others which connect *Thomasomys* with *Rhipidomys* and still others which through *Oecomys* return the connection back to *Oryzomys*. Some of these have received special generic names and others have not. Some, like *Oryzomys albigularis*, have only slight leanings away from the group to which they have been assigned, but the direction of these leanings is fairly obvious. Under these conditions, sound judgment is impossible without considering the whole subject with ample material, and this no one has yet been able to do. For the present, therefore, it may be best to retain approximately the present status and recognize *Microryzomys* subgenerically under *Oryzomys*. To give it full generic rank or to transfer it to *Thomasomys* unquestionably would be premature.

Material for a wholly satisfactory revision of the forms closely allied to *minutus* has not been assembled, but they may be summarized to the following extent.

***Oryzomys* (*Microryzomys*) *minutus* Tomes.**

Hesperomys minutus Tomes, Proc. Zool. Soc. Lond., p. 125, 1860—Ecuador, probably near Pallatanga. Type in British Museum. Collected by Fraser, 1859.

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Oryzomys dryas Thomas, Ann. & Mag. Nat. Hist., (7), 7, p. 267, 1898—near Pallatanga, Ecuador. Type in British Museum. Collected by Fraser, Dec. 1858.

Oryzomys (*Microryzomys*) *minutus* Thomas, Smiths. Misc. Coll., 68, No. 4, p. 1, April 10, 1917; Proc. U. S. Nat. Mus., 58, p. 229, 1920—subgenus proposed with notes on first examination of type of *minutus*.

Thallomyscus dryas Thomas, Ann. & Mag. Nat. Hist., (9), 17, p. 613, May 1926—*Thallomyscus* proposed as genus with *dryas* as type after second examination of type *minutus*.

Besides the types of *minutus* and *dryas* in the British Museum, I have examined one specimen from Molleturo, western Ecuador (alt. 7,600 ft.) kindly loaned by the American Museum of Natural History. This had previously been submitted to Thomas and bears his notation "Agrees, both as to skin and skull, with type of *dryas*." To this I fully subscribe, but two specimens from Pallatanga (alt. 4,400 ft.), also from the American Museum, do not agree and are plainly referable to the *longicaudatus* group, perhaps to *O. l. stolzmanni* (or *balneator*). It is more than likely, therefore, that Fraser's types were not collected at the level of Pallatanga itself but on higher ground of which there is no lack within a short distance. That the *minutus* group usually occupies a higher zone than *longicaudatus* and allies I am able to testify from personal experience with them in Peru and Venezuela.

The scanty material representing typical *minutus* indicates that it may perhaps be distinguished from both *aurillus* and *humilior* by somewhat richer, more saturate color. In size and cranial characters it agrees with *aurillus* rather than with *humilior*.

***Oryzomys* (*Microryzomys*) *minutus aurillus* Thomas.**

Oryzomys dryas Osgood, Field Mus. Nat. Hist., Zool. Ser., 10, p. 158, 1914.

Oryzomys (*Microryzomys*) *aurillus* Thomas, Smiths. Misc. Coll., 68, No. 4, p. 1, 1917—Torontoy, Peru.

Microryzomys aurillus Thomas, Ann. & Mag. Nat. Hist., (9), 17, p. 314, 1926.

Thallomyscus aurillus Thomas, Ann. & Mag. Nat. Hist., (9), 17, p. 612, 1926; *ibid*, 18, pp. 160, 1926.

Besides a series from the type locality, Thomas has recorded this form from several localities in northern Peru. The type specimen, kindly loaned by Gerrit S. Miller of the United States National Museum, is a richly colored example agreeing with others from various parts of Peru but somewhat paler than existing specimens of *minutus* from Ecuador. Although it occurs at fairly high altitudes, it appears to be a forest animal and mainly or wholly confined to the eastern and more humid ranges of the Andes.

Oryzomys (Microryzomys) minutus humilior Thomas.

Oryzomys dryas humilior Thomas, Ann. & Mag. Nat. Hist., (7), 2, p. 268, 1898—Bogota region (alt. 8,750 ft.), Colombia.

This is slightly paler than *minutus* and therefore much the same in color as *aurillus*. It is a little smaller than either and is also distinguished by having a smaller, narrower skull with a less expanded cranium. It is represented in Field Museum by a large series (20) from the mountains of Merida, by two specimens from Macotama, Santa Marta, and by two from an altitude of 6,000 feet on Mount Turumiquire in eastern Venezuela. The last of these are quite removed geographically from the others, but do not show any differentiating characters although a larger number might do so.

Oryzomys (Microryzomys) minutus fulvirostris Allen.

Oryzomys (Oligoryzomys) fulvirostris Allen, Bull. Am. Mus. Nat. Hist., 31, p. 86, 1912—Munchique, Cauca, Colombia.

Nothing in the original description of this indicates any means by which it can be distinguished from *O. m. humilior*. Four years after it was described its author apparently discovered its true relationship, for he then said (l.c., 35, pp. 526–527, 1916): "*O. humilior* Thomas (1898) is the first described member of a widely distributed South American group to which is referable *O. fulvirostris* Allen (1912), representing in the Western and Central Andes *O. humilior* of the Eastern Andes, the Santa Marta region and the Merida Andes." Its distinction from *humilior* is very doubtful.

Oryzomys (Microryzomys) minutus altissimus subsp. nov.

Oryzomys minutus Osgood, Field Mus. Nat. Hist., Zool. Ser., 10, p. 158, April 1914.

Type from La Quinua, mountains north of Cerro de Pasco, Peru. Alt. 11,600 ft. No. 24,699 Field Museum of Natural History. Adolescent female. Collected May 14, 1922, by Edmund Heller. Orig. No. 6062.

Diagnosis.—Similar in size and cranial characters to *O. minutus* and *O. m. aurillus*, but entire coloration much paler, the upper and under parts well distinguished, the tail broadly and completely bicolor, the feet wholly whitish without dusky markings. Upper parts with dominant color Ochraceous-Buff rather than Ochraceous-Tawny; under parts Warm Buff to Light Buff rather than Ochraceous-Tawny.

Measurements.—Average of ten adults measured by the collector: total length 196.4 (190–207); tail 114.5 (110–123); hind foot 22.1 (21.5–23). Skull of type which is somewhat immature (selected to show unworn dentition) and a normal adult with well-worn teeth: greatest length 22, 24.1; zygomatic width 11.3, 12.6; width of braincase 11.1, 11.3; interorbital constriction 3.5, 3.4; interparietal 8.3 x 2.5, 8.4 x 2.4; nasals 7.5, 9.4; length of infraorbital plate 1.8, 2.1; palatine foramina 3.9, 4.4; diastema 5, 5.7; bony palate from back of anterior foramina 3.7, 3.8; cheekteeth 3.3, 3.3.

Remarks.—Although characterized only by color, this is a very distinct form possibly entitled to specific rather than subspecific rank. It is found at high altitudes in the puna zone of the less humid western and central cordilleras of northwestern Peru and either extends unchanged into Ecuador or is represented there by a slightly darker variety. Owing to its lighter color, it is superficially much more similar to *O. l. destructor* than are the richly tawny *minutus* and *aurillus*. Its softer pelage, smaller hind foot, and non-projecting infraorbital plate, however, are sufficient to indicate its real affinity.

Two specimens of this mouse from mountains near Otuzco, Peru, have been in Field Museum since 1914 when they were referred to *minutus* on the somewhat qualified advice of Oldfield Thomas. Their distinction from *dryas* was clear enough at that time, but Thomas then refused to admit the identity of *dryas* and *minutus*. My subsequent examination of the two types finds them both rich-colored and quite indistinguishable except as to age, one being quite old and the other immature. Therefore, the name *minutus* cannot be applied to the present form.

In a collection made in 1922–23 by Edmund Heller and J. T. Zimmer in mountains near the headwaters of the Huallaga River, there is now in Field Museum a considerable series in which both *aurillus* and *altissimus* are well represented. At La Quinoa and Chiquirin, Heller obtained thirty-two specimens typical of *altissimus*. Somewhat farther east in mountains near Huanuco, Zimmer obtained eighteen, of which fourteen are *aurillus* and four are *altissimus*. Reference to Zimmer's notes shows these were from two different stations in the same mountains, one at the upper edge of the forest and the other above it on the open puna. At the lower station, where both forest and puna were accessible, he took the entire series of *aurillus* and three examples of *altissimus*. At the upper station, *altissimus* was taken, but not *aurillus*. This corresponds

with my own experience in northern Peru where I collected *altissimus* in open puna near Otuzco and *aurillus* only in heavy humid forest in the central and western cordilleras. The two forms, or representatives, also occur under similar circumstances in Ecuador, but farther north in Colombia and Venezuela only one of them appears to have a counterpart in *humilior*.

Clear evidence of intergradation between the two forms is lacking in present material, but it is suggested in several specimens from the Huanuco Mountains, in one from mountains east of Balsas (Cajamarca district), and in one or two from Ecuador.

In the British Museum, at the time my examination of the types of *minutus* and *dryas* was made, only three examples of *altissimus* were encountered. These were collected by Russell W. Hendee at Yana Mayu, Rio Tarma, Peru, at an altitude of 8,500 feet.

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